

**CLAIMS**

What is claimed is:

1           1.     A multi-element field emission cathode, comprising:  
2                     a common carrier assembly; and  
3                     a plurality of sub-assemblies on the common carrier assembly, each sub-assembly  
4     having a field emission array, the array having a selected area and electrical bond pads for  
5     controlling emission current from the array.

1           2.     The field emission cathode of claim 1 wherein the field emission array is  
2     comprised of carbon-based emitters.

1           3.     The field emission cathode of claim 1 wherein the selected area of the array is  
2     circular, the area having a diameter in the range from about 10 micrometers to about 100  
3     micrometers.

1           4.     The field emission cathode of claim 1 wherein the width of a sub-assembly is  
2     approximately 70 micrometers.

1           5.     The field emission cathode of claim 1 wherein the number of sub-assemblies  
2     mounted on the common carrier assembly is in the range from four to ten.

1           6.     The field emission cathode of claim 1 wherein the number of sub-assemblies  
2     mounted on the common carrier assembly is six.